University of Maine — ECE574: Cluster Computing

Instructor:
Vincent Weaver
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Office: Barrows 203
Office Hours: 10:45am-noon Tuesday and Thursday, or e-mail to arrange an appointment

Course Website:
`http://www.eece.maine.edu/~vweaver/classes/ece574_2015f/`

Lectures: Tuesday/Thursday 3:30pm-4:45am, Barrows 133

Final Exam: Thursday 17 December 2015, 2:45pm-4:45pm, Barrows 133

Course Listing:
Advances in high-end computational technology continue to bring the digital revolution into academic, industrial and commercial areas. A popular approach for achieving high performance for these application domains is to use parallel computers. Introduces the primary parallel computer architectures, as well as the programming techniques applicable to concurrent, parallel and distributed computations. Students will gain experience in developing parallel computing solutions for challenging problems. Lec 3.

Pre-requisites:
C- or better in ECE177 or permission
This course involves extensive C coding.

Textbook:
None

Computer Accounts:
You will be assigned accounts on various Linux servers in order to do homework and project assignments. It is expected that you will use these accounts in a responsible way.

List of Topics Covered:
High Performance Computing, Performance Analysis, Hardware Performance Counters, Multi-threaded programming, OpenMP programming, MPI, GPGPU, Network Topology, Load balancing, Job Scheduling, Fault Tolerance, Cluster Filesystems, Cluster Operating Systems, "Big-Data"

Assignments:
Assignments will be announced in class and posted to the website. Homework submissions will be done via e-mail.

Grading:

Class Participation (5%)
11 homework assignments (lowest one dropped) (50% total)
1 project (20%)
1 midterm exam (10%)
1 final exam (15%)

Late Work: Late work is penalized at 20% a day.

Academic Honesty Statement

Academic honesty is very important. It is dishonest to cheat on exams, to copy term papers, to submit papers written by another person, to fake experimental results, or to copy or reword parts of books or articles into your own papers without appropriately citing the source. Students committing or aiding in any of these violations may be given failing grades for an assignment or for an entire course, at the discretion of the instructor. In addition to any academic action taken by an instructor, these violations are also subject to action under the University of Maine Student Conduct Code. The maximum possible sanction under the student conduct code is dismissal from the University.

Students with disabilities statement

If you have a disability for which you may be requesting an accommodation, please contact Disabilities Services, 121 East Annex, 581-2319, as early as possible in the term.

Course Schedule Disclaimer (Disruption Clause)

In the event of an extended disruption of normal classroom activities, the format for this course may be modified to enable its completion within its programmed time frame. In that event, you will be provided an addendum to the syllabus that will supersede this version.

Sexual Violence Policy and Sexual Discrimination Reporting

The University of Maine is committed to making campus a safe place for students. Because of this commitment, if you tell a teacher about an experience of sexual assault, sexual harassment, stalking, relationship abuse (dating violence and domestic violence), sexual misconduct or any form of gender discrimination involving members of the campus, your teacher is required to report this information to the campus Office of Sexual Assault & Violence Prevention or the Office of Equal Opportunity.

If you want to talk in confidence to someone about an experience of sexual discrimination, please contact these resources:

- For confidential resources on campus: Counseling Center: 207-581-1392 or Cutler Health Center: at 207-581-4000.

- For confidential resources off campus: Rape Response Services: 1-800-310-0000 or Spruce Run: 1-800-863-9909.

- Other resources: The resources listed below can offer support but may have to report the incident to others who can help: For support services on campus: Office of Sexual Assault & Violence Prevention: 207-581-1406, Office of Community Standards: 207-581-1409, University of Maine Police: 207-581-4040 or 911.

Or see the OSAVP website for a complete list of services at `http://www.umaine.edu/osavp/`